Original Article

The Mighty Scrub - A Case Series Of Various Manifestations Of Scrub Typhus In A Tertiary Care Hospital.

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Abstract

This case series discusses the various manifestations of scrub typhus in a tertiary care hospital in Tamil Nadu, particularly in Chengalpattu district. Scrub typhus is one of the important causes of acute febrile illness in and around Chengalpattu district. The manifestations of scrub typhus are totally different and they can mimic any other illness. Early suspicion will help in diagnosing and treating the patient. The manifestations which we are discussing are totally different from the common scrub typhus infection. The usual findings are fever, myalgia, thrombocytopenia, and cough. One third of patients can present with varied symptoms like ARDS, Pancytopenia, acute kidney injury, lymph node enlargement, and co-existing with other infections. This case series will help us in identifying different manifestations of scrub typhus and their appropriate treatment.

Keywords: Scrub typhus, Various manifestations, Tamil Nadu.

INTRODUCTION

Scrub typhus is promoted by Orientia tsutsugamushi, an obligate intracellular gram-negative bacterium that was first discovered in 1930. It is passed in human by the leptotrombidium (chigger) mite.[1] Vasculitis and endothelial cell dysfunction are linked to this illness. Monocytes, endothelial cells, and other cells are the primary targets. These symptoms range from minor to severe. Rashes, fever, headache, lymphadenopathy, and a cough are symptoms of the onset. The incubation period lasts from 6 and 21 days.[2]Scrub typhus has fatality rate high and reported in about a million cases every year. There have been a significant number of cases of this disease reported in India's ecologically diverse regions, including Tamil Nadu, Karnataka, Andhra Pradesh in the south, Uttaranchal, Himachal Pradesh, Jammu, and Kashmir in the north, Assam, Meghalaya, and Nagaland in the north-east, Bihar and West Bengal in the east, and Rajasthan and Maharashtra in the west.[3]

Case 1:

A 60-year-old female residing in Chengalpattu district came to emergency department with complaints of acute onset breathlessness of grade IV. The patient had a history of fever for the past four days. No other complaints were present. On clinical examination, the patient was severely tachycardia and on auscultation, the patient had bilateral crackles over the basal regions of the chest wall and other systemic examinations were found to be normal. The patient's vitals were as follows: pulse rate of 120 beats per minute, blood pressure of 140/80 mmHg, Spo2 of 85% in room air, and respiratory rate temperature of 102.4 F. On the basis of this clinical picture, the patient was initially diagnosed as having an acute febrile illness secondary to COVID-19 infection. Lab investigations revealed Hb-12.2; WBC-4500; N-75% L-20% E-04% M-02% B-01% Creatinine-1.1, Urea-20 Liver function tests were within normal limits. ABG was done, which showed features suggestive of Type I respiratory failure.

The patient was planned and taken for a computerised tomography chest which showed features suggestive of ARDS (Acute Respiratory Distress Syndrome), (Figure 1) with no features of COVID-19 Pneumonia. A thorough clinical examination was done to rule out any rashes or eschars. Initially, COVID-19 was suspected; however, RTPCR was performed and found to be negative.Due to strong suspicion and because the patient was residing in Chengalpattu

district, Scrub typhus IgG and IgM were sent along with Dengue, Leptospira, and Malarial parasite were sent. Scrub typhus was found to be positive and the rest of the profile was found to be negative. Scrub typhus presenting as ARDS is a rare manifestation. The patient was started on intravenous doxycycline 100mg twice daily, and the patient recovered on day 3 and was shifted away from the intensive care unit. The patient was discharged on Day 6 with oral doxycycline. This case is an interesting case of Scrub typhus presentation as ARDS when there is high suspicion of Covid 19.

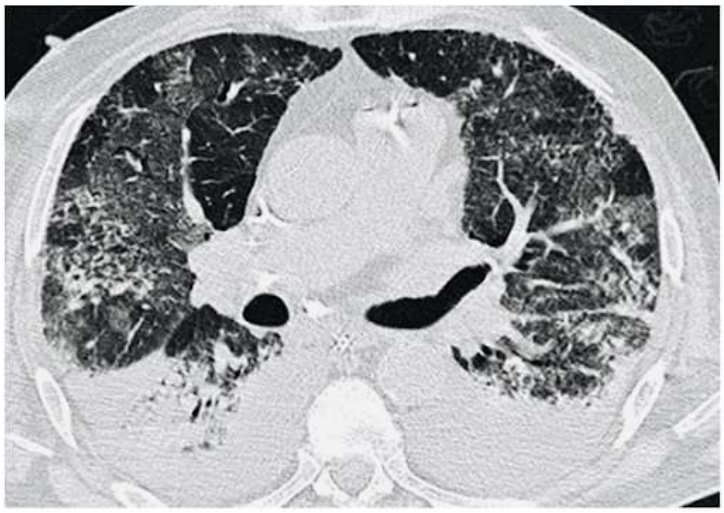

Figure 1: CT Chest Showing Respiratory Distress Features.

CASE 2

A 50-year-old female presented to medicine OPD with complaints of fever for the past 8 days, which were high grade, intermittent in nature, associated with chills and rigor. The patient was treated in an outside hospital with oral antibiotics, but the fever persisted. No complaints of myalgia, headache, vomiting, loose stools, chest pain, and shortness of breath. The patient had no other complaints. On arrival, patient vitals: pulse rate 104/min regular, BP-130/90 mmHg, temperature-101.F, SpO2-99.5 % under room air. Other systemic examinations were found to be normal. Initial baseline investigations were sent. Complete blood count-Hb-9.3g/dl, WBC-2.020, N-68, L-20, M-05, E-04, B-00, Platelet-55,000. Creatinine-0.9, Urea-22, and liver function tests were done, which revealed mild transaminitis. A routine fever profile was sent (Smear for Malaria parasite, Dengue NS1,IgM & IgG), which was found to be negative. The patient was initially diagnosed as having Pancytopenia under evaluation.

The patient was examined thoroughly for any petechiae or for any other rashes. The patient had an eschar in her right thigh and her residence history was probed, which revealed she was from Chengalpattu district. Scrub typhus was sent, which was found to be positive. The patient was started on IV Doxycycline 100mg twice daily. Her repeat complete blood count on Day 3 was improved with HB-10.2, WBC-4600, Platelet-1,30,000 and her transaminitis was on a resolving trend. On day 5 patient's pancytopenia was completely resolved. The patient was discharged on Day 7 with oral doxycycline. Scrub typhus presenting with pancytopenia was a rare manifestation. Only through examination, which the patient fortunately had eschar in her left upper thigh region (Fig 2) helped in diagnosing the patient. Otherwise, the patient would have been evaluated for Pancytopenia and the diagnosis would have been a difficult task and appropriate treatment would have been missed. This is a case of Scrub typhus presenting with pancytopenia.

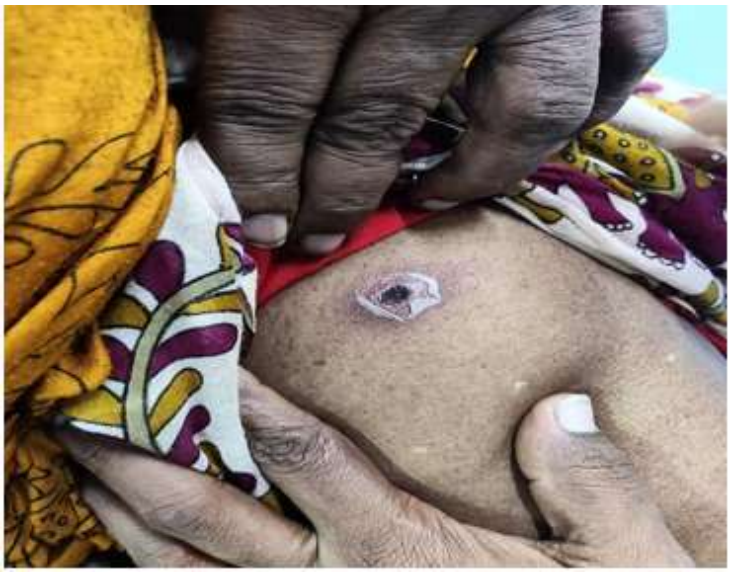

Figure 2: Eschar in the left upper thigh.

Case 3:

A 40-year-old male residing in the Chengalpattu district came with complaints of decreased urine output for the past two days. On probing, the history patient had history fever one week back and it resolved on its own. No history of any facial puffiness, shortness of breath, limb swelling, rashes, myalgia, headache, vomiting, or loose stools. The patient had no other complications. The patient was evaluated on an opd basis. A complete blood count, renal function test, and liver function test with a complete urine routine were ordered as part of evaluation for decreased urine output. Initial investigations revealed Hb-12.8g/dl, WBC-5,400, and platelet-1,70,000. Creatinine 3.4 and Urea-92. Liver function tests were within normal limits. The complete urine routine was found to be normal. A USG abdomen was done, which was found to be normal.

Further probing of history like NSAID's, native medication history, along with other drugs and habitual history were taken, which was negative. A clinical examination of head to toe was done, which revealed eschar in the lower back (Fig 3). and Scrub typhus along with Malaria parasite, Dengue Ns1, IgG, and IgM, were sent. Scrub typhus was found to be positive and other fever profiles were found to be negative. Scrub typhus presenting as acute kidney injury is common, but patients are usually associated with features like thrombocytopenia and transaminitis. Only acute kidney injury is a rare phenomenon. The patient was started on oral Doxycycline 100mg twice daily. On day 3 of Doxycycline, creatinine was 2.2 with a urea of 68 with daily monitoring of input and output of urine, which was also improved. On day 5 patient's creatinine was 1.8 with a urea of 50, with improvement in the urine output. On day 7, creatinine was 1.1 with a urea of 40 and the patient was discharged with oral doxycycline.

Figure 3: Eschar in the lower back region

Case 4

A 52-year-old male came to the emergency department with complaints of fever for the past 8 days with chills and rigor. The patient also complained of headaches and vomiting for the past 3 days. On examination, the patient was dehydrated and petechiae was present. Under normal conditions, the patient's pulse rate was 120 beats per minute, blood pressure was 90/60 mmHg, temperature was 102 degrees Fahrenheit, and spo2 was 99%.On clinical examination, the patient had petechiae over both arms. The patient was icteric all over the body. On systemic examination, the patient had mild ascites and decreased air entry over the basal chest regions. The patient was initially diagnosed with an acute febrile illness with a viral etiology.Dengue Ns1 IgG & IgM were sent along with the malaria parasite was sent. A complete blood count revealed Hb-11.1, pcv-40, wbc-2,900, and platelet-25,000. Creatinine-1.6 urea-60, total bilirubin-4.2, direct bilirubin-1.4, indirect bilirubin-2.8, AST-80, ALT-130. Usg abdomen which showed mild ascites with gall bladder wall edema. Patient Dengue Ns1 was found to be positive. The patient was treated with intravenous fluids. A repeat liver function test with complete blood count was done on day 3 of admission and revealed hb-11.2 with pcv-39, wbc-3800 platelet count of 35,000. Bilirubin levels were on an increasing trend with worsening transaminitis.

On day 4, platelets improved to 50,000 with worsening transaminitis. The patient also developed acute kidney injury with a creatinine of 1.9 with urea-90. Due to the worsening of acute kidney injury and worsening of transaminitis with improving platelet count and normal PCV levels with no signs of third space fluid loss or dehydration, scrub typhus was suspected and investigated. On clinical examination patient had a eschar in the abdominal region. (Fig: 4).Patient scrub typhus results were found to be positive. The patient was started on intravenous doxycycline.

On day 7, patient transaminase and bilirubin levels started decreasing with resolving acute kidney injury. This was an interesting case because of the double positive of both dengue Ns1 and scrub typhus. The patient on day 9 improved symptomatically with a resolved acute kidney along with resolution of liver function. The patient was discharged with oral antibiotics and advised to review it after 8 weeks. The patient improved clinically, and other investigations were found to be normal, and the patient was discharged. This is a case of dengue infection overlapping with scrub typhus infection, which is usually missed.

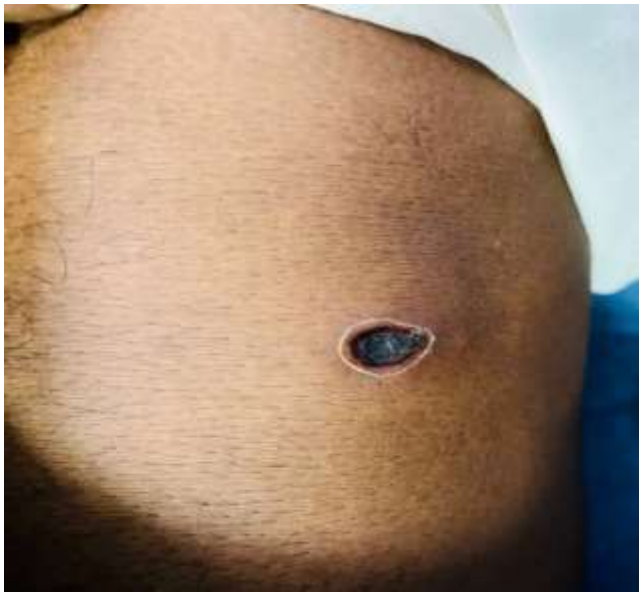

Figure 4: Eschar in the abdomen

DISCUSSION:

Scrub typhus is an uncommon condition that very occasionally manifests in Tamilnadu's districts. There have been more incidences of Rickettsial infections reported from various parts of India. Scrub typhus is diagnosed utilizing Faine's criteria together with epidemiological data, occupational history, clinical examination, and laboratory support. The majority of recorded cases originate from Vellore and Tamil Nadu.[4]

A research from the same region found that among these 36 who tested positive for OXK antigens, headache and fever were the most prevalent symptoms (more than 50%), followed by a cold and cough without any rashes (40%). According to the Weil-Felix test, 39 out of 200 individuals had rickettsial infections.[5]

In present case series the most common clinical features represents fever, myalgia, thrombocytopenia and cough. There are symptoms we have observed in our study was Pancytopenia, Acute kidney injury, Lymph node enlargement.

A study done at Chennai's tertiary hospital revealed that 33% of patients had renal failure, 52% had increased serum alkaline phosphate, and 25% had seizures. 6.25 percent of subjects died as a result of multiorgan failure.[6]

Due to a low index of suspicion, non-specific symptoms, the absence of characteristic feature, and a paucity of diagnostic resources in India, it might be difficult to diagnose scrub typhus.

There is a variety of tests, each with their own drawbacks, including indirect immunofluorescence, Weil-Felix, PCR, ELISA, and culture.[7]Some of these techniques, such as PCR and indirect immunofluorescence, which offer precise and specific diagnosis, are either unavailable or prohibitively expensive in developing nations. The Weil- Felix is an inexpensive technique which lacks both specificity and sensitivity.[8]There is an urgent requirement of fast, easy and cheap screen test. ELISA is and cheap and simple test but the screening result of this test takes times which further delay the diagnosis and treatment process which sometimes led to poor outcomes.[9]

So rapid techniques which provide the result quickly can change the overall outcome of disease. There are various other serological test are available Immunoperoxidase assay, Microimmunofloescence, latex agglutination, enzyme linked immunosorbent assay indirect, hemagglutination, dot blot immunoassay. Polymerase chain reaction can detect acute infection with Orientia tsutsugamushi.[10]

A rapid immunochromatographic assay which uses recombinant major outer membrane protein Antigen (r56) of Orientia tsutsugamushi to detect IgM, IgG and IgA antibodies hasbeen shown to be reliable and suitable for use in developing countries.[11]In our series we have used the ELISA based technique along with malaria and dengue test to screen the Scrub Typhus.

In a study conducted by Vivekanandan et al. in a Pondicherry tertiary care hospital, it was discovered that 46% of patients had Eschar.[12] It can be present in other situations as well, but scrub typhus is only present when a febrile sickness is present. Some time it overlooked due to its painless and no itchy characteristics. Eschar is dark colored spot developed from painless papule in the beginning. In our series all the patients in our study had it, but Chrispal et al study's from South India found it in 45.5% of cases.[13]

However, Sinha et alstudy's from Northwestern India could not find it in even one case.[14]

The first line of treatment for scrub typhus is doxycycline. The recommended dose of doxycycline is 100 mg daily two times in that body weight above 40kg, 2.2mg/kg body daily two time weight below 40kg.[15] For the treatment of this illness, additional antibiotics include rifapicin, chloramphenicol, and azithromycin. There was no death in our series and all patients received doxycycline treatment, to which they all reacted favourably.

CONCLUSION

In many regions of India, scrub typhus is an endemic disease; hence all practitioners should be well-versed in it. When a patient has a fever and raised liver enzymes, even though eschar is present or not, Scrub typhus should be suspected,

and if there is a high index of suspicion, an empirical therapy with doxycycline should be initiated. A prompt diagnosis and antibiotic treatment may stop future problems.

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